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GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS A

A502/01

Unit B (Foundation Tier)

Candidates answer on the question paper.

OCR supplied materials:
None

Other materials required:

- Geometrical instruments
- Tracing paper (optional)

Monday 17 January 2011

Afternoon

Duration: 1 hour



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

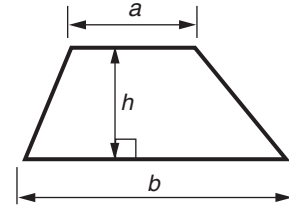
- The number of marks is given in brackets [] at the end of each question or part question.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is **60**.
- This document consists of **16** pages. Any blank pages are indicated.

WARNING

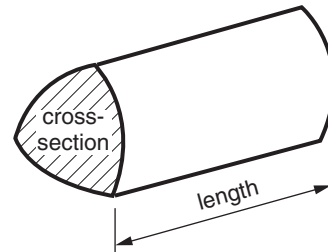
No calculator can be used for this paper

Formulae Sheet: Foundation Tier

$$\text{Area of trapezium} = \frac{1}{2} (a + b)h$$



$$\text{Volume of prism} = (\text{area of cross-section}) \times \text{length}$$



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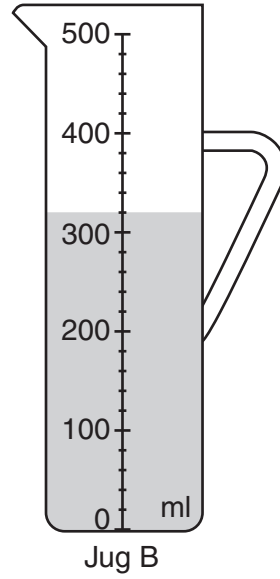
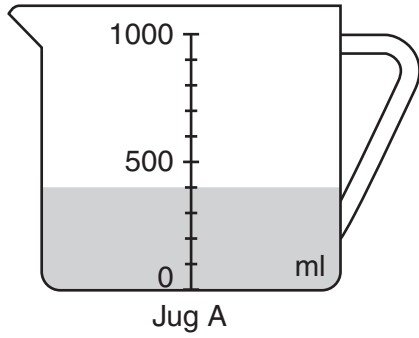
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1 (a)



(i) How many millilitres of water are in jug A?

(a)(i) _____ ml [1]

(ii) Complete this statement.

(ii) Jug _____ has _____ ml **more** water in it than jug _____ [2]

(iii) Jill adds half a litre of water to jug A.

How many millilitres of water are in jug A now?

(iii) _____ ml [2]

(b) Here are some amounts of water in millilitres.

Put them in order, starting with the smallest.

2039 3194 4193 3419 1999

_____ [1]
smallest

- 2 (a) (i) John works out $12.6 \times 0.5 = 6.3$.

What is 0.5 as a percentage?

(a)(i) _____ % [1]

- (ii) John wants to find 25% of 12.6.

How can he do this?

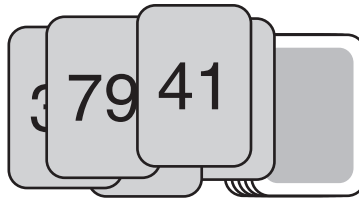
_____ [1]

- (b) Cancel this fraction down into its simplest form.

$$\frac{18}{24}$$

(b) _____ [2]

- 3 Luke has some cards that show **all** possible positive two-digit whole numbers from 10 onwards. Each card has a different two-digit number written on it.



- (a) Write down the **largest** two-digit number written on a card.

(a) [1]

- (b) What is the lowest total Luke can make by adding the numbers on two cards?

(b) _____ [1]

- (c) Write down a pair of these cards where the numbers add up to 100.

(c) and [1]

- (d)* Luke thinks that he can find 50 **different** pairs of cards where the numbers add up to 100.

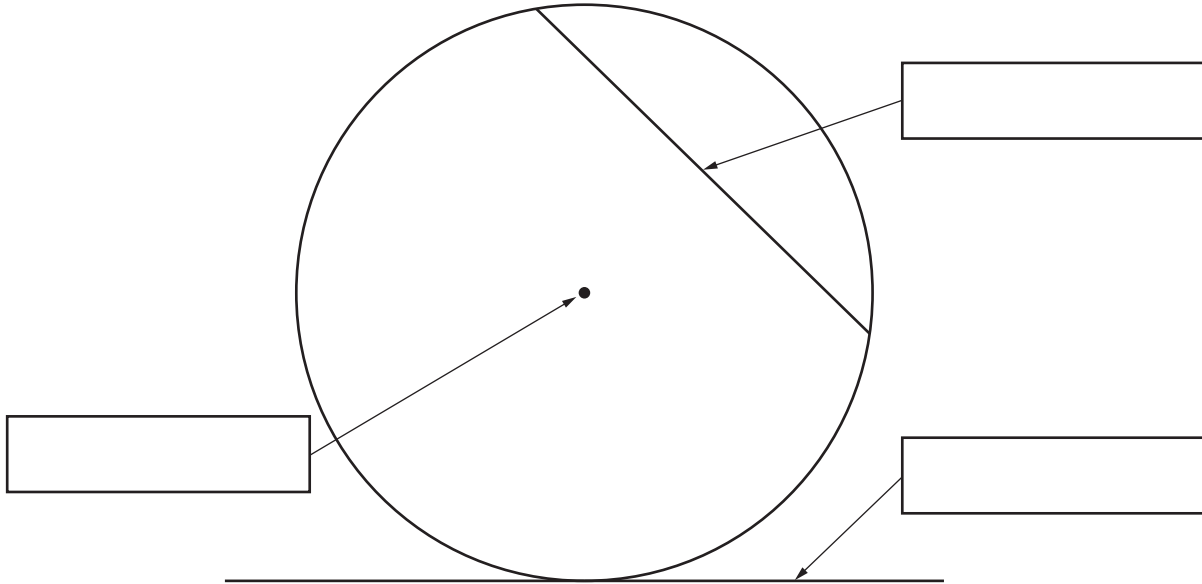
Is Luke correct?

Show how you decide.

[3]

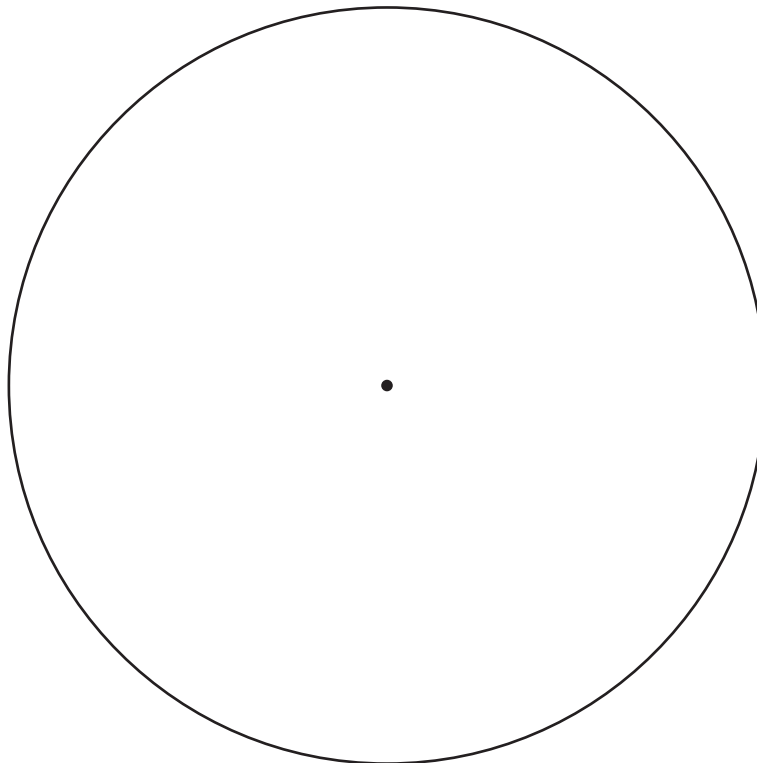
- 4 (a) Write the correct mathematical name in each box.
Choose from this list.

radius chord diameter tangent centre



[3]

- (b) Construct a regular hexagon.
Each vertex of the hexagon must lie on the circle.



[3]

- 5 Triangle B is a 4 times enlargement of triangle A.
Write either True or False beside each statement.

Statement	True or False
The sides of triangle B are 4 times as long as the sides of triangle A.	
The angles of triangle B are 4 times as big as the angles of triangle A.	
The perimeter of triangle B is 12 times as long as the perimeter of triangle A.	

[2]

- 6 (a) Change $\frac{7}{10}$ to a percentage.

(a) _____ % [1]

- (b) Change $\frac{3}{5}$ to a decimal.

(b) _____ [2]

- (c) Complete this statement by using **one** of these symbols $<$, \leq , $=$, \geq or $>$.

(c) $\frac{3}{5}$ _____ 56% [1]

- 7 (a) Work out an estimate of the answer to this calculation.

$$19.6 \times 3.2 + 12.07$$

(a) _____ [2]

- (b)* Sally sees this advert.

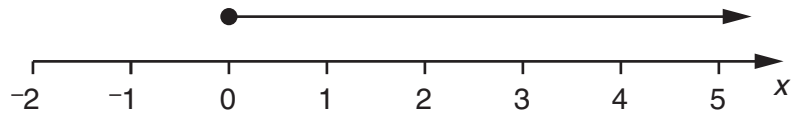
<p style="text-align: center;">WAREHOUSE WORKER</p> <p>Hourly rate £7.19</p> <p>$8\frac{3}{4}$ hours each day, Monday to Friday</p> <p>No weekend work</p>

She estimates that she would earn £400 for a full week's work.

Is Sally correct?
Show how you decide.

[3]

- 8 (a) Write down the inequality represented on this diagram.



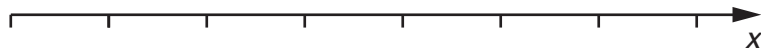
(a) _____ [1]

- (b) (i) Solve this inequality.

$$7x + 5 \leq 47$$

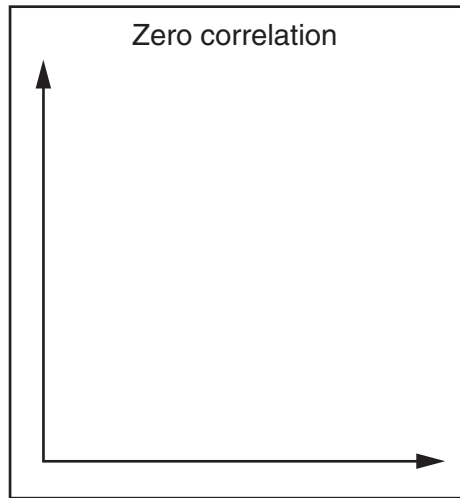
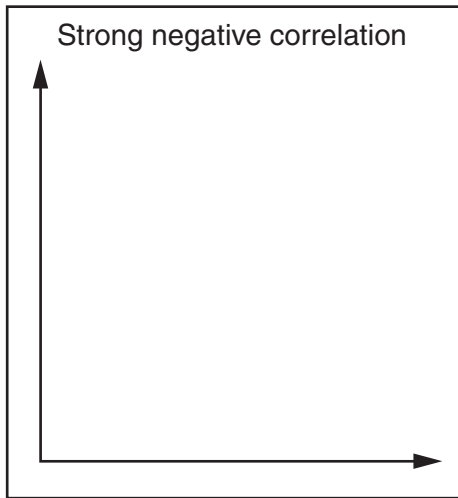
(b)(i) _____ [2]

- (ii) Show the solution to part (b)(i) on this number line.



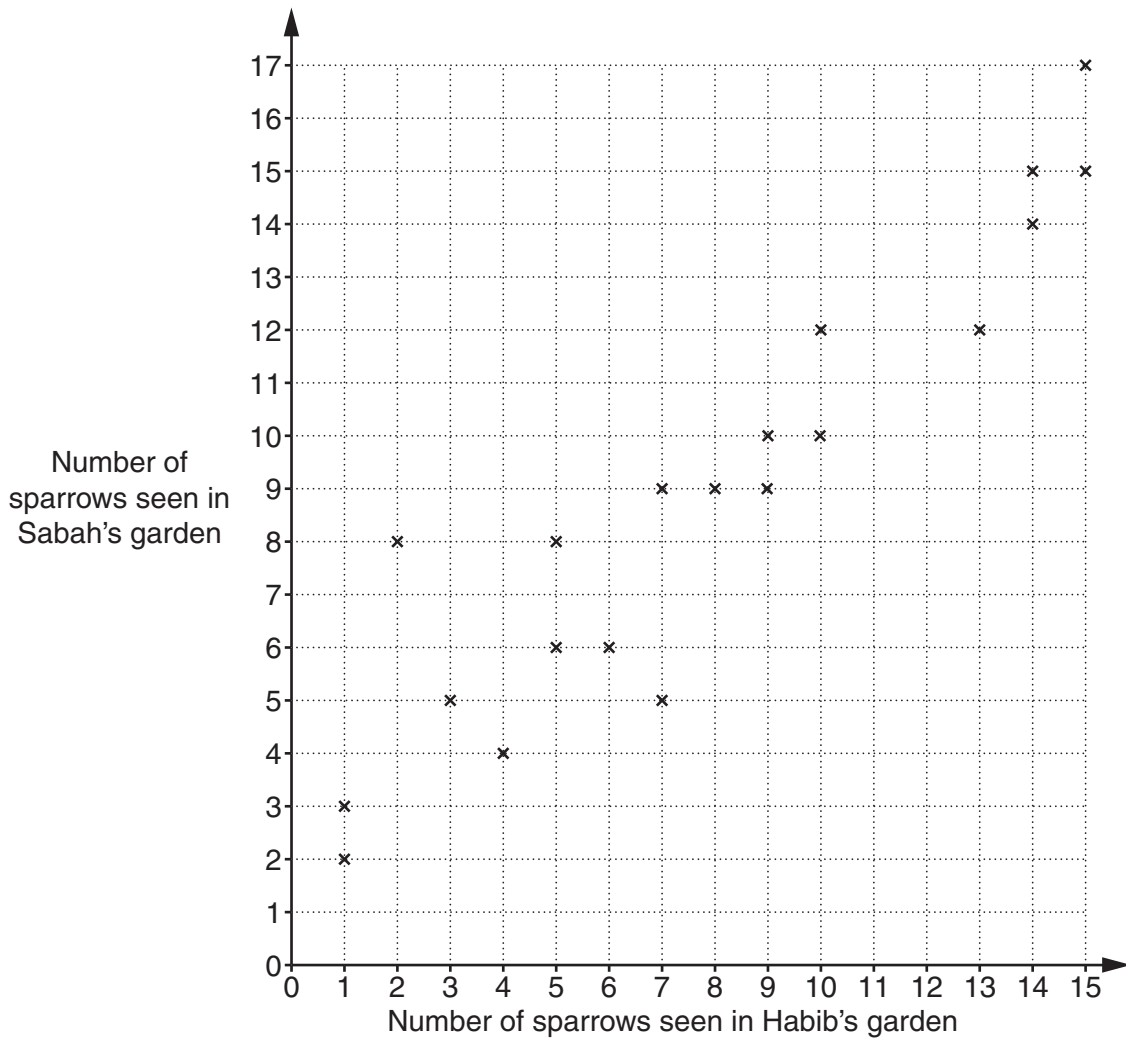
[2]

9 (a) Put 8 crosses on **each** diagram to show the type of correlation stated.



[2]

(b) Habib and Sabah live next door to each other. They are both keen birdwatchers. Each day they record the number of sparrows they see in their own garden. This scatter graph shows some of their results.



(i) Draw a line of best fit on the scatter graph. [1]

(ii) One day Habib saw 12 sparrows in his garden.

Use your line of best fit to estimate the number of sparrows Sabah saw in her garden.

(b)(ii) _____ [1]

(iii) One day Sabah saw four times as many sparrows as Habib saw.

How many sparrows did Sabah see that day?

(iii) _____ [1]

- 10 Harpreet is doing an experiment. She attaches different weights to the end of a spring and then measures the length of the spring.

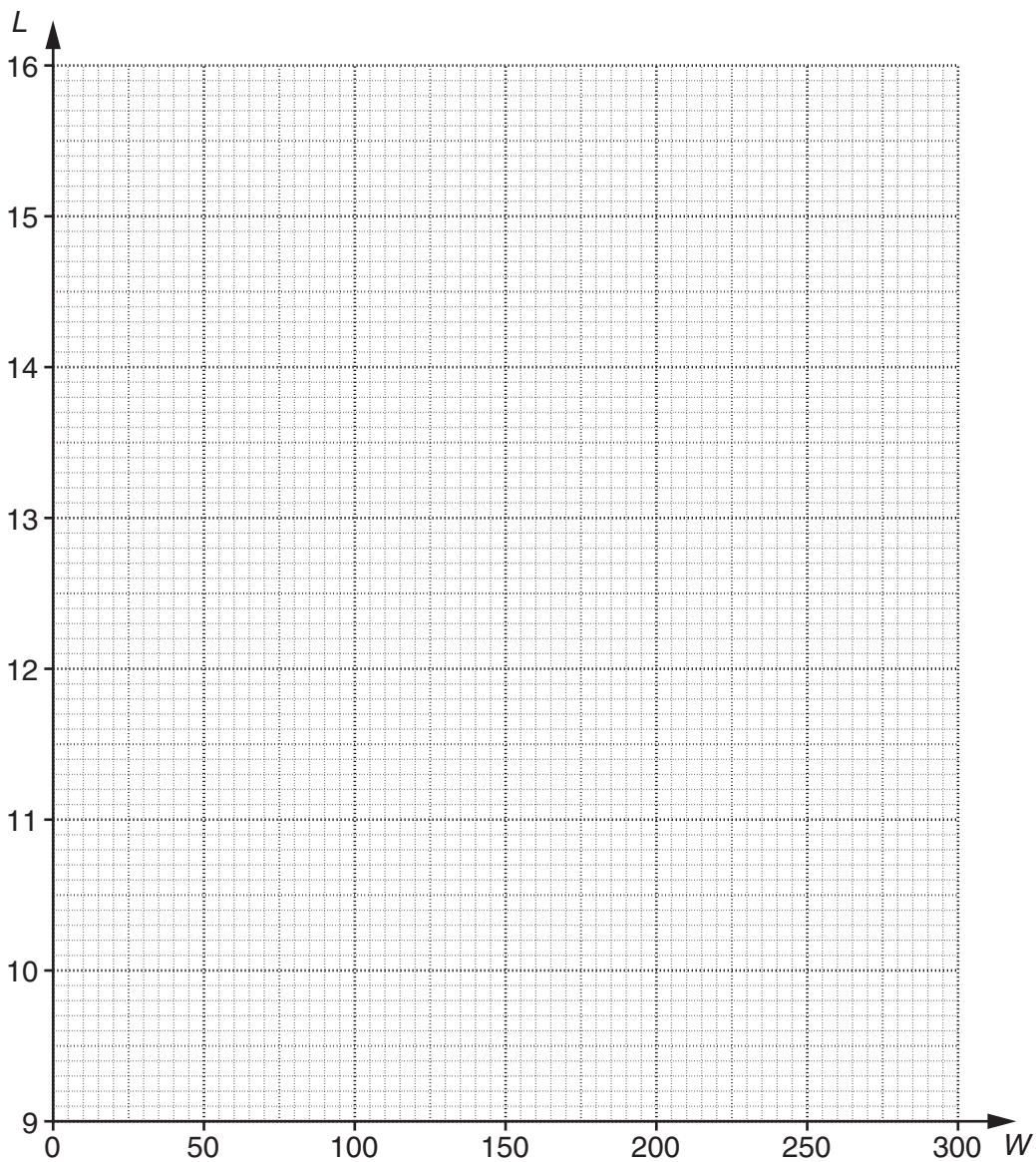


She records the length, L cm, of the spring for each weight, W g.

Her results are given in the table.

W	50	80	120	200	260
L	11	11.6	12.4	14	15.2

- (a) Use these values to draw the straight line graph of L against W .



[3]

(b) How long was the spring before Harpreet attached any weight to it?

(b) _____ cm [1]

(c) The equation of the graph in part (a) is

$$L = 0.02W + 10.$$

Write down the gradient of this line.

(c) _____ [1]

(d) Harpreet says that she can use the equation in part (c) to calculate the length of the spring if she attaches a 5 kg weight to it.

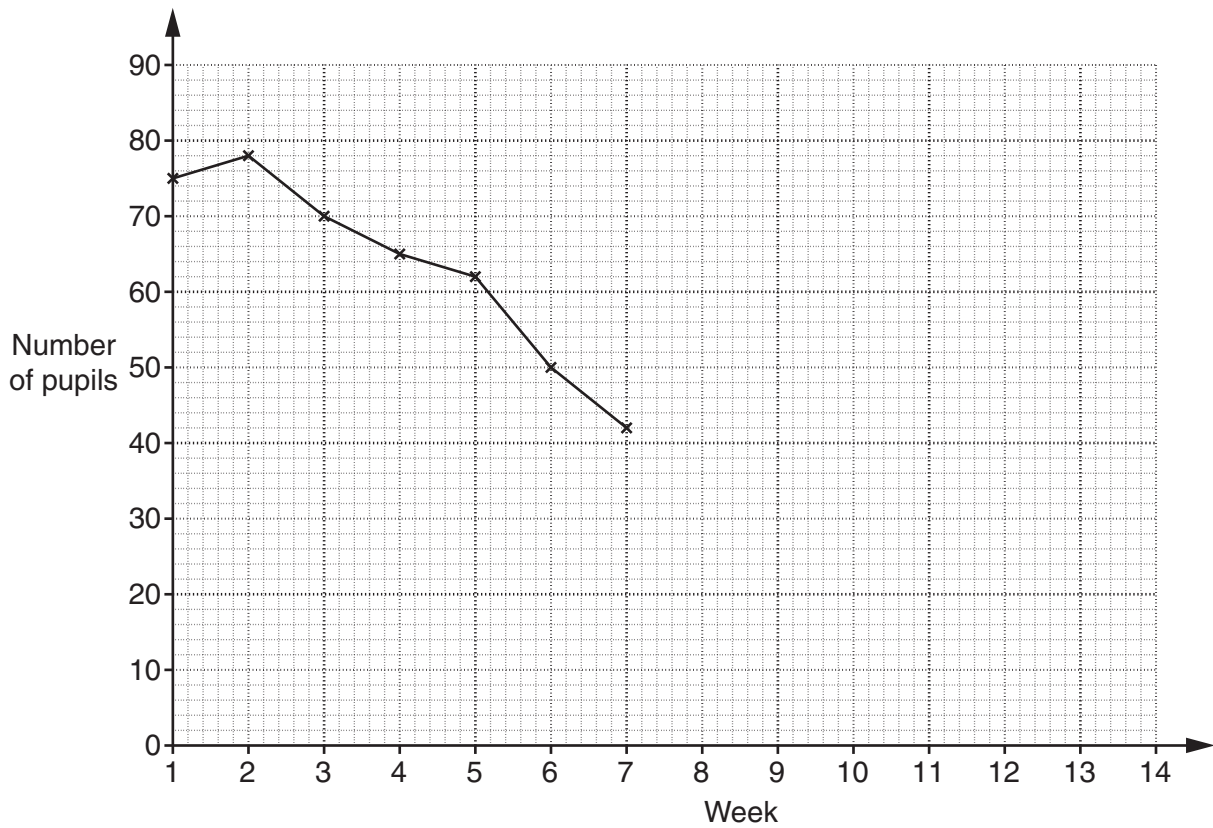
Explain why she may be wrong.

_____ [1]

- 11 (a) These are the numbers of pupils that used the local school bus, each week, during one autumn term.
The figures for the last week of term, week 14, are covered in ink.

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Total number of pupils using the bus in the week	75	78	70	65	62	50	42	35	55	62	65	68	69	

Complete the time series graph up to week 13.



[2]

- (b) The school had an outbreak of flu that term.

In which week do you think the flu outbreak died down?
You must use evidence from the graph to support your answer.

Week _____ because _____

[2]

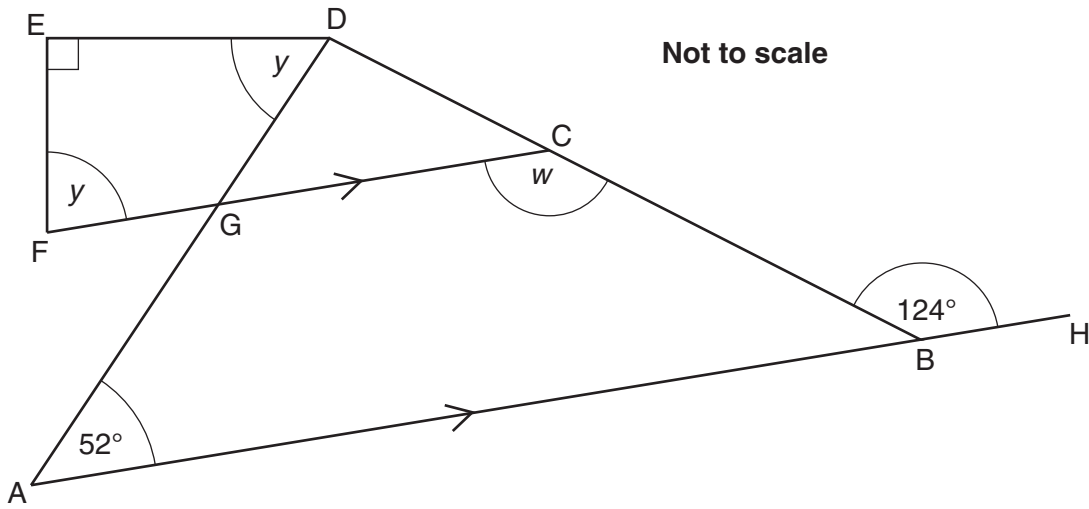
15

(c) Plot a point that **could** represent week 14. Give a reason for your choice.

[2]

TURN OVER FOR QUESTION 12

- 12 ABH and FGC are parallel straight lines.
 Angle GFE = angle GDE = y .
 Angle DEF = 90° .



- (a) Write down the size of angle w .

(a) _____ ° [1]

- (b) Work out the size of angle y .
 Show your working clearly.

(b) _____ ° [4]